

## CLAIMS

The invention claimed is:

1. A method for producing a decoy infrared signature to direct an incoming infrared missile away from an aircraft infrared signature and to the decoy infrared signature, the method comprising the acts of:

deploying a towed IR decoy proximate at least one time period including aircraft take off and aircraft landing;

producing the decoy infrared signature with the towed IR decoy, wherein the decoy infrared signature is brighter than the aircraft infrared signature produced by the aircraft; and

retracting the towed IR decoy after the aircraft reaches an altitude that is beyond a range of the infrared missile or proximate the time immediately preceding or after the aircraft has landed.

2. The method for producing a decoy infrared signature to direct an incoming infrared missile away from an aircraft according to claim 1, wherein the act of retracting the towed IR decoy after take off is performed at approximately 10,000 feet.

3. The method for producing a decoy infrared signature to direct an incoming infrared missile away from an aircraft according to claim 1, further including the acts of:

detecting the incoming infrared missile with a warning system; and

responsive to said detecting act, deploying the towed IR decoy when the warning system has detected the incoming missile, and for retracting the towed IR decoy when the warning system is not detecting the incoming missile.

4. The method for producing a decoy infrared signature to direct an incoming infrared missile away from an aircraft according to claim 3 and responsive to said detecting act, further including the act of masking an infrared signature of an engine of the aircraft with an exhaust obscurant.

5. The method for producing a decoy infrared signature to direct an incoming infrared missile away from an aircraft according to claim 4, further including the acts of:

repeating the detecting act to detect the incoming infrared missile with the warning system; and

responsive to said repeated detecting act, increasing intensity of the towed IR decoy by rapid modulation if the incoming infrared missile has been detected.

6. The method for producing a decoy infrared signature to direct an incoming infrared missile away from an aircraft according to claim 5, responsive to said repeated detecting act, increasing density of the exhaust obscurant if the incoming infrared missile has been detected.

7. An aircraft system for producing a decoy infrared signature to direct an incoming infrared missile away from an aircraft infrared signature and to the decoy infrared signature, the system comprising:

an IR decoy, for producing the decoy infrared signature;

an electrical supply source, for powering the IR decoy; and

a deployment and retraction device, for deploying and retracting the IR decoy proximate at least one time period including aircraft take off and aircraft landing.

8. The aircraft system according to claim 7, wherein the IR decoy includes fiber optic cables.

9. The aircraft system according to claim 7, wherein the IR decoy includes heated elements.

10. The aircraft system according to claim 7, wherein the electrical supply source includes a laser.

11. The aircraft system according to claim 7, wherein the decoy infrared signature from the IR decoy is brighter than an infrared signature from an engine of the aircraft.

12. The aircraft system according to claim 7, further including a warning system, for detecting the incoming missile.

13. The aircraft system according to claim 12, further including an engine exhaust mask, for masking an infrared signature of an engine of the aircraft.

14. An aircraft system of an aircraft for detecting and avoiding an incoming infrared missile, the system comprising:

a warning system, for detecting the incoming missile;

a towed IR decoy, for producing an infrared signature decoy after deployment from the aircraft;

a deployment and retraction device, for deploying the IR decoy when the warning system has detected the incoming missile, and for retracting the towed IR decoy when the warning system is not detecting the incoming missile; and

an engine mask, for masking an infrared signature of an engine of the aircraft.

15. The aircraft system according to claim 14, wherein the engine mask is created by adding an additive to an exhaust stream of the engine.

16. The aircraft system according to claim 15, wherein the additive is oil, graphite-oil, or other IR blocking fluids.

17. The aircraft system according to claim 14, wherein the towed IR decoy includes fiber optic cables and a laser source.

18. The aircraft system according to claim 14, wherein the towed IR decoy includes heated elements.

19. The aircraft system according to claim 14, wherein the infrared signature decoy from the towed IR decoy is brighter than the infrared signature from the engine of the aircraft.

20. The aircraft system according to claim 14, wherein the engine mask is created by adding an additive to an exhaust stream of the engine.